COTTON CHATS

FROM

DRAPER COMPANY

SHIPMAN'S
COMMON-SENSE BINDER

PATENTED

JANUARY 19, 1892. APRIL 19, 1904

To open binder, remove the slides from fasteners raise the fasteners to an erect position and then file papers. For punching: lay the papers on covers and mark sheets to correspond with fasteners.

If DUPLICATE is wanted ORDER 25981

ASA L. SHIPMAN'S SONS

MANUFACTURERS,

NEW YORK.

COTTON CHATS

By the Secretary of the

DRAPER COMPANY,

HOPEDALE, MASS.

No. 34. DECEMBER, 1904.

COP SKEWERS.

In the course of our loom experiments, we keep accurate records of actual happenings, and very possibly determine comparative values in a way not often attempted in outside practice. We wish to give our customers the benefit of any knowledge thus obtained, and therefore call attention to a style of cop skewer which we have been using recently with excellent results. The cut on the left shows the skewer of ordinary form and the one on the right the skewer to which we have reference. The difference consists in the peculiar wavy line on the exterior of the spindle. We do not claim that this shape is novel, as many mills use similar forms. We find that the cop waste on the new pattern is less than one-quarter of that with the regular skewer. We have to pay a slight advance for this extra process, but shall not make any difference in the price charged to customers.

• • •

LOOM TESTS.

Outside critics have sometimes referred to the tests made in our private weaving department as having little or no value for comparative purposes, because we are supposedly using better yarn and more perfect conditions than are attainable in the average weave room. We wish to correct

this impression, by explaining that the warp and filling yarn which we use is not especially prepared for us in any way, but is bought in open market from various mills, and we are confident that if the same yarn were made in a mill which we could control, we should insist on better quality and more uniformity. Our weave room is merely a space partitioned off in our wooden setting-up room, and while we endeavor to secure proper atmospheric conditions, we know that we do not secure as good conditions as we should in a weaving room designed for that purpose alone. We see no reason why our records should not be bettered in the average mill where our looms are run. The one advantage that we do obtain is that of having sufficient extra men so that careful note may be made of every error in operation that does occur.

• • •

IMPORTANT—IF TRUE.

The Fall River Evening News of Friday, November 4, contained a half column reference to a patent suit on the well known Sherman patent, the contents of which are so absolutely misleading and unwarranted as to show either great ignorance or deliberate misstatement on the part of the writer.

We make the following corrections. It is stated that "*the case is of great interest to all cotton goods manufacturers.*" This is untrue. The Sherman patent in suit expired on its face in May, 1904, and the royalty prices on spindles were adjusted to the new conditions at that time. The question involved in the suit is merely whether the Sherman patent expired earlier with a certain English patent and affects only our right to an accounting from the defendant.

It is not true as stated that "*some of the most important patents covering the Draper loom are in the same situation relative to a continued holding of patent rights as the Sherman spindle patent.*" The decision in

this case cannot and will not affect any one of our loom patents, and any contrary statement is due either to ignorance or deliberate misrepresentation.

Since the Fall River News statement many cotton trade papers have printed similar announcements. We have taken pains to notify each of their error and expect them to print proper corrections. It is of course possible that we may not see every notice of this nature and must therefore trust in our own publication to advise those most directly interested.

• • •

PATENT EXPIRATION.

We are surprised to hear from various sources that there is a vague rumor circulating to the effect that it may be well to consider delaying purchase of Northrop looms a few years, until our main patents have expired, as competitors will then force down prices by selling filling-changing looms on a lower basis. It is true that we did take out several patents in 1891 on the earlier devices in this line, but the fact that we ourselves did not place Northrop looms in the mills until 1895, shows that these earlier devices were not sufficiently developed to meet with our own approval for trade use in large quantity. They did not contain the advantages of the trade mechanisms, and they would not be acceptable in view of the advantages of the more recent devices. The ideas presented in our first trade looms were covered by patents taken out near the time of sale, which will not expire for seven years or more. Since that period, we have taken out hundreds and hundreds of other patents on newer improvements. The looms sold in '95 were built over to make them satisfactory; but they do not compare with the looms which we sell today. Those who might be able to build our loom of 1895, at the lapse of seven or more years would not only have to compete with our present improvements, but also with the improvements which

we shall undoubtedly introduce during the next seven years. If they would be willing to sell a duplicate of our early loom at cost price, with no profit whatever, we should easily prove that our present loom is well worth the difference between such figures and our asking price. There is not one single group of mechanism on our loom of today, which is not fully covered by patents having from ten to seventeen years of life.

There were many mills who thought they would wait when we asked them to buy in 1895. Every one of the mills that did buy has proved the value of their purchase by giving us large orders for more looms. We could make a strong argument by referring to the present conditions of many mills that did not follow such a course, but we are content to let the possible purchaser make his own comparisons.

• • •

GOOD WEAVING.

A correspondent of the Manchester Guardian recently sent them a report from which we quote the following item:

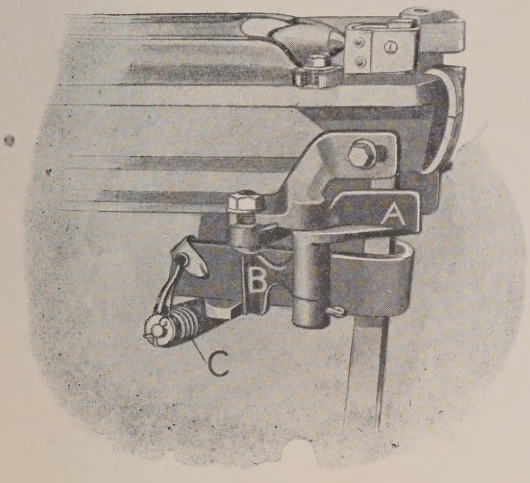
"*In the weave rooms there were 1030 plain and 1292 Northrop looms, working mostly on sheetings and shirtings. The 1292 Northrop run at 166, with an average of 20 looms to a weaver, whilst plain looms on the same width making 168 picks, average six to a weaver. On 30 in. Northrop, running at 176 picks, I am told that most of the weavers look after as many as 28 looms, whilst the whole room of 1292 automatic looms is run by only 62 weavers.*"

• • •

COTTON CHATS

By the Secretary of the
DRAPER COMPANY,
HOPEDALE, MASS.

No. 35. JANUARY, 1905.



LOOM CHECKS.

The problem of a proper check for a loom has never been satisfactorily solved, unless we ourselves have recently attained the maximum of perfection. Whether this be so or not, we have certainly made an improvement over everything within our own experience. In the original Northrop loom, Mr. James H. Northrop devised a check which we have used continuously to date on practically all the Northrop looms sent out. It consists in a leather strap enclosing the picker stick, with guides furnishing sufficient friction so that the stick is partially restrained in its back motion, the forward blow of the stick bringing the strap into place for the next retarding of the stick. This check serves an excellent purpose so long as the leather remains in good condition, but the wear necessitates replenishment so often as to make the expense item a considerable figure. Certain mills have used other checks on their Northrop looms, and some mills have been run without any checks at all; a practice which we do not countenance under any circumstances. Within a few years, outside parties have introduced checks of various kinds and principles, and so within the same period we have given considerable atten-

tion to comparative tests between checks of various kinds, whether owned by ourselves or not. Our testing period lasted many months, and during that time we probably made comparative tests of at least 50 different devices. The more promising were tested on several looms at a time for many weeks, with careful records kept, showing the attention necessary in setting the pick, the number of bang offs, the effects of wear, etc. Many of the checks were tested on cop looms to show the percentage of split cops. With our Northrop looms, the effect on the threading of the shuttle was also considered. It is often found difficult to decide between different mechanisms if the results are somewhat uniform. In the check test, however, there was one construction which was so universally better in results of various kinds as to easily ensure its position in the first rank. The device was invented by our Mr. Jonas Northrop, and is shown by the illustration. It uses a strap of leather, but this is not subject to the same strain and wear as our former leather check strap. The excessive wear in the former instance was due to the harsh blow of the stick in its forward movement. With the present check, no such impact occurs, the check being returned to place by a simple spring (C). The stick, when engaged by the shuttle, is checked by the necessity of moving the leather strap with it through a short space, and as the stick moves back, it also acts upon a pivoted lever (A), which in its movement brings pressure through the arm (B) against the strap to still further retard its motion. The resistance is therefore proportioned to the movement of the stick, bringing a graduated friction. The principle must be correct, for the results are certainly superior.

While there is no question but that a better check allows an increase of speed in the loom, we have not introduced this new device with the idea of suggesting a change in this direction. We do not attempt to dictate to our customers how they shall run our looms, but we certainly are interested to see that they derive the best advantage from them. We started with the idea of lessening the weaver's work, so that the mill could profit by lessening the price paid per cut of cloth and still give the weaver as much, or more wages. High loom speed multiplies warp breakage, makes the loom require more attention from the fixer, increases the evils of shock and jar in many directions, and wears out the whole machine. We believe that a better

product per weaver may be obtained by running the loom at a moderate speed; although we might profit by greater sale of repair parts if higher speed were advocated. There is no reason why the Northrop loom cannot run as fast as any common loom on similar work. We think that common looms are often run at too high speed.

• • •

ARRANGEMENT OF LOOMS.

Our Mr. C. H. Draper has given considerable study to the problem of arranging Northrop looms so that the weaver shall operate them with the least possible exertion. A great deal of a weaver's time and energy is taken in the moving from one loom to another. The usual weaver plans to get to every loom as it is stopped, so as to start it up as soon as possible, attending to the duties of taking off cloth and putting bobbins in the hopper while all the looms are running. The problem was figured by taking the average distance a weaver would be obliged to go, by adding the distances from each loom to every other loom, and dividing by the product of the number of looms, multiplied by the number of looms minus one. On the single-alley system, the average distance for 16 print looms figured 19.23 feet. On a double-alley system, 16 looms, the average distance figured 15.82 feet, a saving of 17.7 per cent. With 24 looms, the saving of the double-alley system is even greater, the average distance with single alley being 29.52 and with double alley 21.19, or 28.2 per cent. saving. With a single-alley system, the average distance between looms increases directly as the number of looms; but with the double-alley system, while the looms are increased 50 per cent., the average distance from loom to loom is increased something like 35 per cent., showing it is easier for a weaver to run a given number of additional looms than it is to run an equal number of original looms. The two-alley system also allows the weaver to move in a circular path while filling batteries, and thus to be always approaching the batteries which need attention the most; whereas, in the single-alley system, when the weaver reaches the end of an alley, the loom needing attention is at the other end.

The problem was also considered in relation to arranging 24 looms in three alleys, eight to the alley. The average distance is practically the same as with two alleys, but there are disadvantages in having three separate alleys to

move around in. With more than 24 looms there might be advantages in the three-alley system, but so far as our present experience goes, we are not prepared to give a definite recommendation. We do unhesitatingly recommend the two-alley system between the limits of 12 to 24 looms to the weaver.

• • •

During the recent unfortunate conditions at Fall River, various articles have appeared in the papers which give the detail of investigations made by interested parties. A local report of this nature was printed in the Boston Herald for Nov. 21, 1904, and we take the liberty of quoting some special details which may be important for future reference. The writer had been shown the books of a print mill, and given accurate figures of wages earned by individual weavers under different conditions. The mill referred to had changed over their common looms to warp stop-motions at a cost of $25 per loom. They had reduced their weaving price, but had furnished extra help for cleaning and oiling looms. Figures are not given to show the effect of less cloth per loom. The weavers appeared to be making more money by running a larger number of looms with this new system; but the real question, which cannot be determined by brief trial and which must be found out by actual investigation of labor, is: Are these weavers working harder than formerly by the necessity for doing more manual operations within the same period of time? There is nothing mysterious whatever about the problem. A weaver has a certain number of operations to perform to accomplish a given result, the number varying somewhat with the conditions, but being constant to the conditions. There are a certain number of warp threads to mend, a certain number of shuttles to replenish, and a certain number of cuts to take off. We can figure that the weaver under the new system, must perform more labor, if given more than 12 looms, as compared with the 8-loom common weaver. There may be weavers who can stand the extra strain of this extra labor for an indefinite period. Our own experience, however, would lead us to believe that continuous excess of this nature is not feasible. This same article makes a comparison with mills in the South having Northrop looms, where the pay is 6 1-4 cents per cut of 54 yards. We doubt if the warp stop-motion weavers can compete with these figures.

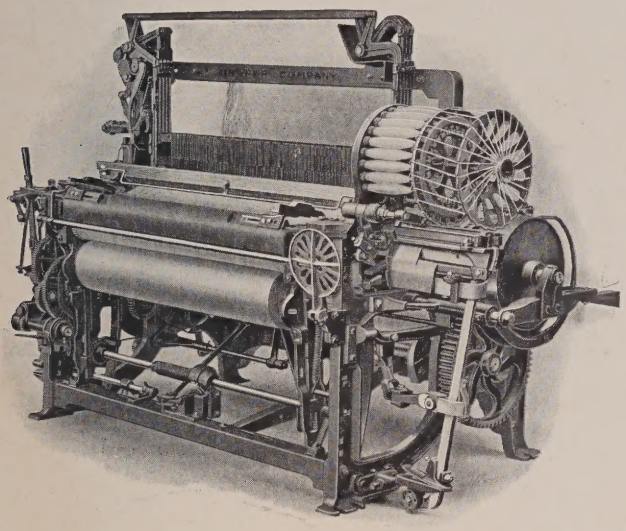
COTTON CHATS

By the Secretary of the

DRAPER COMPANY,

HOPEDALE, MASS.

No. 36. FEBRUARY, 1905.



THE ROPER HARNESS-MOTION.

The above cut illustrates our standard E Model loom, equipped with our new harness-motion, invented by Mr. C. F. Roper, whose name has been continuously associated with our loom improvements. The illustration also shows the Bolton loom seat, and our new outside bearing for crank shaft. This Roper harness-motion is absolutely novel in principle, embodying many marked advantages. As applied, it will weave any goods from two to five harness, and it will weave a much wider range than any common harness-motion not of the dobby type. It was designed for use with our steel-heddle warp-stop, and is peculiar in having no cams on the cam shaft within the frame, no bottom connection to the harness bar or frame, and no straps or springs to allow back lash. The operative mechanism is all outside the loom frame, where it is easily adjusted when adjustments are necessary. Many changes in shedding can be made by simple hand manipulation, without loosening a

screw or turning a nut. If necessary to change the cams, they are easily removed; in fact, there is no other harness motion in existence which allows a change with as little labor.

We have run these motions for many months in continuous operation, and did not offer them to the trade until they had been used in large quantity in outside mills, where they have given universal satisfaction. We have labored for years to get a harness-motion for multiple-harness weaving that would enable us to use our steel heddle in this field. This new motion seems well adapted for both fine and coarse weaving. The heddles themselves have proved to be practically indestructible, and their automatic spacing saves great expense in harness cost. Used as a stop-motion, this harness saves extra cost in drawing in, especially over cotton harness looms with warp stop-motions running on coarse numbers, where the beams empty rapidly.

• • •

DRAPER COMPANY PATENTS.

A newspaper item recently called our attention to the fact that we are probably controlling more new patents than any other concern in the country, with the possible exception of the General Electric Company. The Patent Commissioner's reports for several years seem to verify the assumption. While our corporation is quite modest in capitalization, and also in quantity of business, as compared with many of the large industrial organizations, we have apparently made more of a speciality of our patent department. We secured ownership, or control, of over 130 patents last year, and even more the year before. The General Electric Company and the Westinghouse Companies are the only others, who attempt a large ownership in patents. There is a large gap between the Westinghouse Companies and the next nearest competitor in this line. As we have been in business much longer than either of these more modern concerns, we probably own more patents in total than either of them; though, of course, this assumption is made without definite knowledge, for the Patent Commissioner's records themselves, as printed, do not give the changes in ownership of patents after they are granted.

• • •

SCARCITY OF HELP.

Those who think that the South is destined to monopolize the cotton manufacturing industry of the world must stop to consider that abundance of raw material is not the only essential factor in the situation. Abundance of proper help is fully as requisite, and good help is now so scarce in cotton manufacturing centers that travelling agents are offering all sorts of inducements to bring it to the mills, and even to persuade help to leave one mill for another. The situation emphasizes the necessity for use of labor-saving machinery. The new mills of the South have almost universally adopted our loom, which requires less than half the weavers for a given product. A good proportion of the old mills have also applied them in large quantity; but there still remain many thousands of common looms in various localities. Were these common looms to be replaced by Northrop, the help question would be settled for many years ahead. It is much easier to get help for Northrop looms than for common, not only because the work is easier on the Northrop looms, but also because green help can be taught to run this loom without much preliminary experience.

• • •

The following quotation from the Providence Journal presents a wholly impartial and unprejudiced view of a situation which has awakened national interest. We do not know who the writer may be but his views meet with our hearty approval.

"It is patent to all who have investigated the subject that the day is not far distant when a competition so close as to leave room for the fittest only will force the corporations of New England to adopt the latest devices in labor-saving machinery, regardless of expense. Curiously enough, as one authority has pointed out, the objection to

any radical re-equipment just at present comes from the side of capital and is responsible in no small measure for Fall River's embarrassment and the destructive sacrifices which she has been making. As a rule, and for reasons that are obvious, the objection to contrivances and inventions calculated to lighten toil and reduce the length of pay-rolls arises from the ranks of the operatives, futile as it always has been and must be.

But for once, managers, deterred by first cost and a period of depression, have rebelled against the outlay involved in the required changes. And in their effort to compromise with their pocketbooks by experimenting with a "stop motion" for looms, they have driven the help beyond the point of human endurance. At least, this is the charge preferred by the operatives concerned. It is not and has never been a question of wages solely. It follows that what is true of the Fall River companies in the particulars cited must be true of a majority of the companies in this section, and sooner or later all of them will be called upon to meet the issue. It is contended that Southern mills, of comparatively new construction, have an advantage in the matter of weaving alone which cannot be overcome by makeshifts."

• • •

LOOM SALES FOR 1904.

In spite of the unsettling conditions and general depression in the cotton industry we shipped 11,732 complete Northrop Looms in 1904 and also applied 189 filling-changers and 1873 warp stop-motions to other looms. We start the new year with many thousand more on our order-book and each one sold will make the plight of the common-loom user still more embarrassing.

• • •

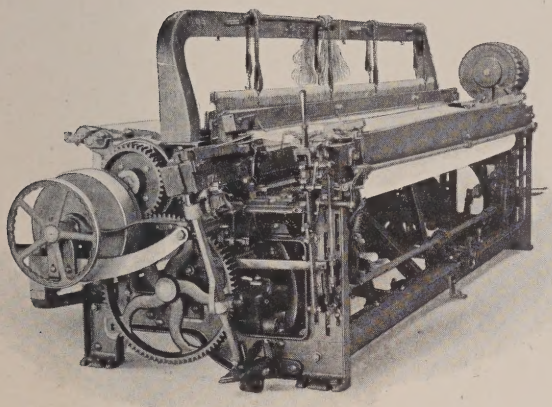
COTTON CHATS

By the Secretary of the

DRAPER COMPANY,

HOPEDALE, MASS.

No. 37. MARCH, 1905.



OUR "L" MODEL LOOM.

While we have had excellent success with the broad looms which we have already sold, we have felt that improvement was possible, especially in view of certain governing conditions. It seems quite important that a broad loom intended to replace old broad looms, should have the same floor space, and in this new design we have kept within the conventional limits. We are to build this model to weave cloth from 72 to 108 inches in width.

It will be noticed that we drive from an auxiliary shaft, with pulley geared to run at higher speed than the crank shaft, thereby producing great ease in operation; in fact, one observer said that it ran as easy as a 40 inch loom. We drive through a clutch pulley, and stop with a band brake, to which we call especial attention.

The pick motion on a broad loom requires careful study. We have made a long line of experiments on our rocker motion and shuttle box design with this end in view. We use a front binder on our broad looms exclusively, with long shuttle box and lengthened shuttle. When weaving two beams, we use a compensating, compound let-off.

Our crank shaft is of great strength, being 2 1-4 inches in diameter. The lay and reed cap are also of extra strength. We are using a new warp stop-motion with cotton harness for this loom, having a new indicating device which allows the weaver to readily discover the broken warp end. Although not shown in the cut, we shall apply our new foot shipper-motion, which is an auxiliary shipper near the hopper end of the loom, operated by the foot so that the weaver may stop or start the loom from the hopper end, without walking over to the shipper end. In broad loom weaving, this saves appreciable time.

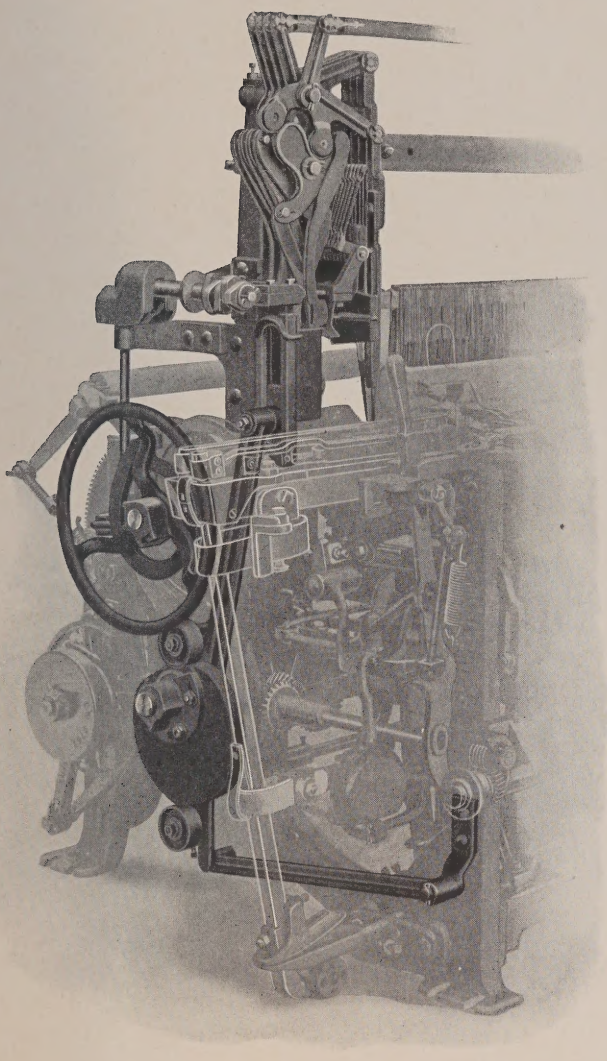
So far as the filling-changing devices are concerned, this loom will naturally have all the very latest mechanisms.

• • •

NORTHROP LOOMS IN ENGLAND.

An interesting article, referring to the progress of the Northrop loom in England, was published in the Manchesier Guardian for Saturday, Dec. 31st. It refers to the Daisy Hill mill, particularly, in which 196 Northrop looms, one-half bobbin and one-half cop, are tended by 15 weavers, with an efficiency of about 95%, against the common practice of 50 to 65 weavers in a similar shed on common looms, with an efficiency of 80 to 85%. The writer believes that the weavers prefer to work on the Northrop looms, and that the naturally slow introduction of the loom will cause no apparent effect on the labor situation. He calls attention to the fact that there are more Northrop looms running in England today, than all other automatic looms put together; which is certainly interesting, in view of the dozens of shuttle-changing looms which sprang up on all sides about the time that the Northrop loom was first introduced there.

• • •



DETAILS OF ROPER HEAD.

We present another illustration, showing more of our Roper harness-motion. The main operating parts are in full detail, with the rest of the loom in lighter shading. The motion for the harnesses is derived from a cam on the end of the lower shaft, this one cam serving for all of the harnesses. There is a small shaft with selecting cams, as noted, which governs the timing of the shedding operations. The sequence of the shades, however, can be changed by hand manipulation of the compound levers, within a certain range. Even if necessary to change the selecting cams, it is evident that this can be accomplished with a great saving in time over the former necessity of removing cams from the center of the cam shaft within the frame of the loom.

• • •

We quote the following from one of our expert's reports on a Northrop loom mill:

"*In the year 1904 the mill ran 252 1-2 days of 10 hours each.*

"*On 800 looms they gave out 261 new shuttles.*"

Another report on another mill had the following:

"*Their cost of supplies for the four weeks ended January 7th, was $83.25 for 1292 (Northrop) looms; while on the 1174 ——— looms for the same period, the cost of supplies was $301.71.*"

• • •

Among the orders received since Jan. 1st, 1905, are orders for Northrop looms from the Wamsutta Mills, the Pacific Mills, and the Amoskeag Mfg. Company, three of the most representative concerns in the North. From the South, we have new orders from former customers, like the Monarch Cotton Mills, the Rosemary Mfg. Company, the Lanett Cotton Mills, and the Glenn-Lowry Mfg. Company. Also orders from new customers; the Palmetto Cotton Mills and the Thomaston Cotton Mills. The present order of the Pacific Mills increases their total orders to about 3,000 looms in all, making them our second largest customer to date. The Pacific Mills took 100 looms out of the first lot we manufactured for the trade, and their continued orders are certainly good evidence of satisfaction.

• • •

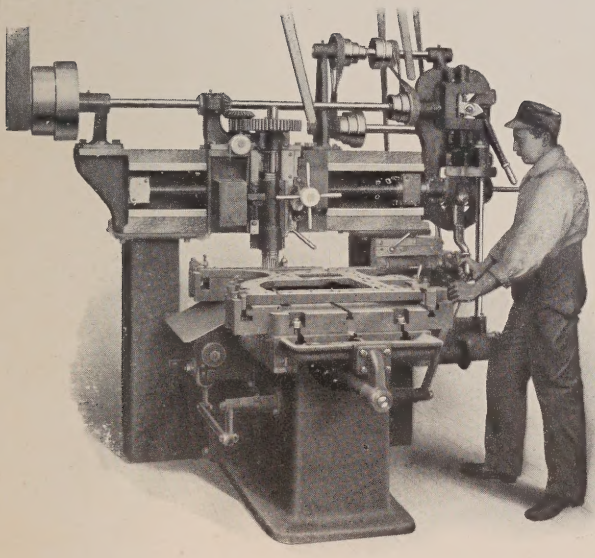
COTTON CHATS

By the secretary of the

DRAPER COMPANY,

HOPEDALE, MASS.

No. 38. APRIL, 1905.



MILLING LOOM FRAMES.

The castings which are assembled into ordinary machinery, are a foundry product, and necessarily vary more or less in many important details. Difference in the heat of the melted metal, and variation in the rapidity of flow, and strains of cooling, are bound to warp and twist the finished product more or less, in spite of care. If we add to these reasons the differences introduced by old foundry practice, in hand made molds with uniform patterns, the errors are

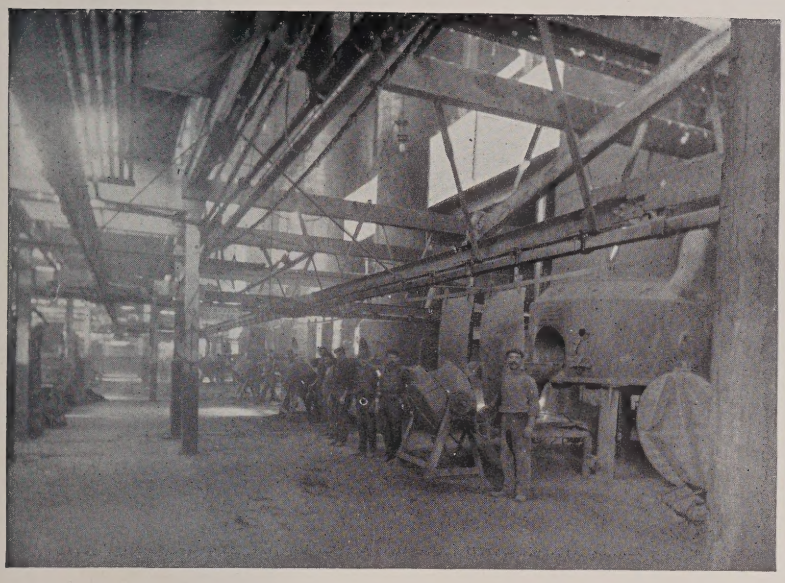
necessarily multiplied. Our own foundry is equipped with the very best molding machines; in fact, they represent improvements designed in our own shops, and incorporated in trade machines through special arrangement. Our castings have won praise wherever they have gone, as we take particular pains in the selection and combination of different grades of iron to secure uniformity, and the very best possible results both in finish and adaptability to tool work. They are as good if not better than any made elsewhere but still, **they are not good enough.**

Following the general American custom, we have built our looms for years by assembling the frame from the foundry castings, without machining either the sides or girts. In our aim to perfect our loom frame beyond the general practice of loom builders, we have recently introduced a full line of modern machine tools, expecially designed for our own loom products. Each loom that we now send out has the sides carefully milled where other parts are attached, and the connecting girts are also milled to absolute uniformity in length. The cut shows one of our loom side milling machines in operation. There are so many places to be cut that a considerable variety of motions is necessary. The machine for milling the girt ends is naturally more simple in detail. Our looms now approach a uniform standard of size and position of parts, and we expect that they will operate with uniformity and precision. Repair parts will naturally fit closer, and the whole machine has been raised into a higher class **by starting with a machined frame.**

We do not expect that builders of common looms will follow this practice; in fact, we would not advise them to do so. Any money spent in the further perfection of the common loom is practically wasted, for the present common loom is good enough for the few years of use ahead of it.

• • •

Our foundry always excites interest in visitors. We have capacity for one thousand men—six acres of floor space. We know of no larger capacity in the East on this style of product. The views shown were taken recently.

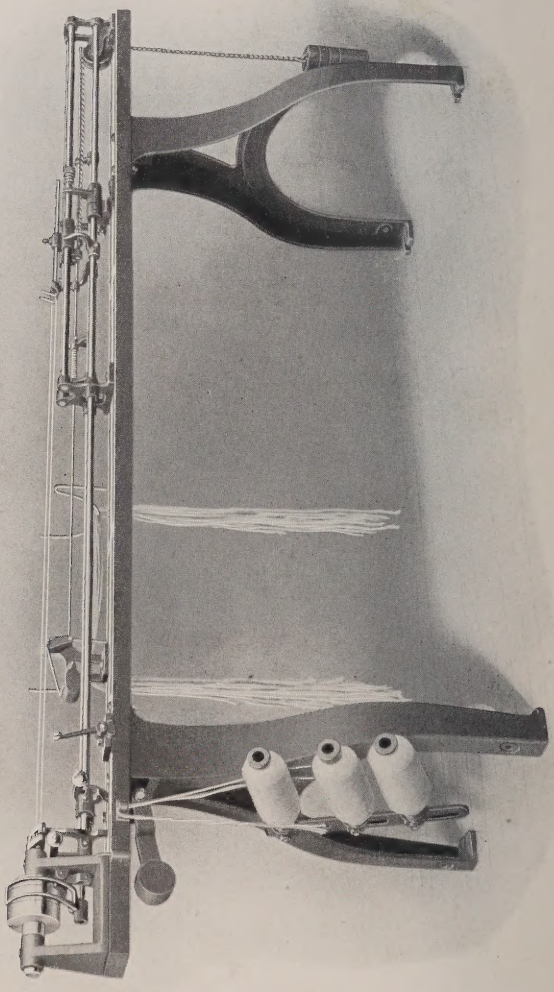


Foundry Stacks at Head-House End.

Floor Molding.

Another View.

In a Northern mill, not far away, a Northrop Loom weaver applied for permission to attend a funeral of some departed relative. The overseer naturally disliked to stop product but remembering the capabilities of automatic weaving told him to leave the looms running and hurry back. Twenty-four Northrops were banging away as he washed up and twenty-two were still going when he returned nearly an hour later. We shall approach a situation where the women weavers will bring in their knitting in order to keep busy and the men take physical culture exercises to keep their appetites in order.



NEW BANDING MACHINE.

We are sending out full descriptive circular of this new machine but print the cut again here as we wish to have this Cotton Chat series contain all our new illustrative matter. We have shown the machine with roving equipment and bands in process of manufacture.